ABSTRACT

A polymer electrolyte membrane comprising a microporous polymer membrane having pores penetrating through the opposite sides thereof. The microporous polymer membrane holds a mixture of a polymer and a molten salt at a weight ratio of 1/99 to 99/1 and/or a molten salt. The polymer electrolyte membrane is inexpensive, durable, excellent in mechanical strength, excellent in structural retention in high temperatures, and capable of stably holding a molten salt in its porous polymer membrane structure, shows high heat resistance, and secures high ionic conductivity in the absence of water or a solvent and is therefore useful in fuel cells, secondary batteries, electric double layer capacitors, electrolytic capacitors, and the like.